



Memorandum

*To: Stephanie Vaughn (USEPA)
Elizabeth Buckrucker (USACE)*

*From: Sharon Budney (CDM Smith)
George Molnar (CDM Smith)*

Date: April 2, 2012

*Re: Status Report (March 2012)
CPG Oversight of Chemical Water Column Monitoring
Lower Passaic River Restoration Project*

On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), Kansas City District, CDM Federal Programs Corporation (CDM Smith) is providing oversight of the Cooperating Parties Group (CPG) remedial investigation/feasibility study (RI/FS) field activities associated with chemical water column monitoring (CWCM), and the collection of chemical data in the Lower Passaic River (LPR).

CDM Smith oversight activities were conducted on March 26 and March 27, 2012. Oversight included observations of the collection of samples in the LPR and tributaries in support of the CWCM study. In addition, CDM Smith also collected split samples at select locations. All activities were conducted in accordance with the CPG *Quality Assurance Project Plan/Field Sampling Plan Addendum (QAPP/FSP)*, *Remedial Investigation Water Column Monitoring/Small Volume Chemical Data Collection*, Revision 2, August 2011. The Louis Berger Group Inc. (LBI) conducted oversight of CWCM activities in Newark Bay. Oversight observations made by LBI staff are not included in this summary.

Photographs of field activities are included in Attachment 1. Copies of the logbook notes are included in Attachment 2 and copies of the chain of custody records are included in Attachment 3.

General Summary

Oversight consisted of observations of in-river and field facility activities conducted by CPG contractors AECOM. Ocean Surveys Incorporated (OSI) provided vessel and sampling support.

All sample locations were verified by oversight staff using the map provided in CPG's QAPP/FSP. Review of the United States Geological Survey (USGS) gauging station at Dundee Dam indicated that maximum flow was just above 400 cubic feet per second (cfs). This flow rate was well within the criteria required for this event to be considered a routine event.

Per AECOMs QAPP, if river flow velocities are greater than ($>$) 250 cfs at Dundee Dam, samples would be collected at river mile (RM) 10.2 instead of 13.5. In addition, if flow at the dam is less than ($<$) 1,000 cfs, samples would be collected at locations identified as Tidal 1 and Tidal 2 based on the location of the salt wedge instead of RMs 4.2 and 6.7 if flows were $>$ 1000 cfs. AECOM followed this approach which accounted for each of the "Tidal" locations to move to account for the location of the salt wedge. In summary, the following locations were sampled during this sampling event:

- Saddle River
- Third River
- Second River
- Dundee Dam
- RM 10.2
- RM 0
- RM 1.4
- Tidal 1 which consisted of RMs 5.25, 6.43, and 7.6
- Tidal 2 which consisted of RMs 3.33, 3.76, and 4.2

Upon arrival at each RM location, CPG lowered a YSI water quality instrument to the bottom of the riverbed and then raised it while simultaneously collecting water quality data in real time. Attached to the instrument was sampling tubing connected to a remote peristaltic pump located on the sampling vessel. After a full "cast", the instrument was lowered to approximately 3 feet above river bottom, and the pump was activated allowing the tubing to purge for 39 seconds followed by sample collection. Once all samples were collected at the lower depth, the instrument was raised to approximately 3 feet below river surface, the tubing was allowed to purge again for 39 seconds and another sample set was collected.

A similar approach was used above Dundee Dam and at the three tributaries; however, samples were only collected from a single depth, approximately midway in the water column. The YSI and sampling tubing were deployed either off a bridge such as at Saddle River, or crews waded in such as at the Second and Third Rivers. Sampling above Dundee Dam was conducted from a boat.

For this sampling event, CDM Smith accepted split samples from the following locations:

- Third River (non-tidal)
- Second River (non-tidal)
- RM 10.2 (during maximum flood tide)
- RM 0 (during low slack tide)
- RM 1.4 (during maximum flood tide)

Throughout each day, samples were collected and shuttled back to the CPG facility for processing and packing. Oversight of activities at the CPG field facility conducted on March 26 and 27 indicated a relatively organized system of sample logging, labeling, chain of custody generation, and packing given the large volume of samples and bottleware involved. All sample packing activities were conducted in accordance with AECOM's QAPP.

Summary of Daily Activities

The following is a summary of daily activities observed during CDM Smith's oversight of CWCM activities:

Second River, Third River, Saddle River and RM 10.2 (March 26, 2012)

CDM Smith oversight staff observed sampling activities on the Second, Third, and Saddle Rivers, and RM 10.2. At each location, a YSI water quality instrument obtained a profile of the water column in real-time measurements, followed by the collection of surface water via pump and tubing mounted to the instrument. Second River, Saddle River and Third River surface water samples were collected midway through the water column. Samples from RM 10.2 were collected from approximately 3 feet above river bottom, and 3 feet below river surface during each of the four tidal cycles sampled.

CDM Smith oversight staff collected split samples at the Second River, Third River and RM 10.2 locations. Split samples and corresponding CPG samples are presented in Table 1. Copies of CDM Smith's signed chain of custodies are included in Attachment 3.

RMs 0, 1.4 and 4.2 (March 27, 2012)

CDM Smith oversight staff observed boat-based sample collection at RMs 0, 1.4 and 4.2 (Tidal 2). At each location, a YSI water quality instrument obtained a profile of the water column in real-time measurements, followed by the collection of surface water from approximately 3 feet above river bottom, and 3 feet below river surface via pump and tubing mounted to the instrument.

Per AECOM's QAPP, samples were collected four times over the period of one tidal cycle at each location beginning with low slack tide and ending with max ebb tide. Oversight crews observed one sampling event at each of the above mentioned RMs starting at RM 0 (low slack tide) followed by RM 1.4 (maximum flood tide), and Tidal 2 at RM 4.2 (high slack tide). CDM Smith split samples and corresponding CPG samples are presented in Table 1. Copies of CDM Smith's signed chain of custodies are provided in Attachment 3.

QAPP Compliance

All field activities were conducted in accordance with AECOM's QAPP procedures. During sample collection for mercury analysis, the appropriate "clean hand" procedures were followed. In summary "clean hands" procedures were followed with the designated "clean hand" field crew member holding both the sample bottle and "clean" bag. At no point during sampling was the bottleware in contact with the ground or any surface until it was placed into a laboratory-provided bag.

Table 1
Cooperating Parties Group and CDM-Smith Split Sample Identification
March 2012 Chemical Water Column Monitoring Oversight
Lower Passaic River Restoration Project
Lower Passaic River, New Jersey

Location	CPG Sample ID	CDM Split Sample ID	QC Samples	Tide Event	Collection Date	Analysis
Third River	12D-CE05-T3R1-AS	12D-CE05-T3R1-AS-C	MS/MSD **	NA	3/26/2012	PAH/Alkyl PAHs, pesticides, PCB congeners, PCDD/PCDF, metals plus Ti (total and dissolved), mercury (total and dissolved), methyl mercury (total and dissolved), hexavalent chromium (dissolved), TOC, DOC, POC, SSC, TDS
Second River	12D-CE05-T2R1-AS	12D-CE05-T2R1-AS-C		NA	3/26/2012	
RM 10.2	12D-CE02-T102-AS	12D-CE02-T102-AS-C		maximum flood	3/26/2012	
RM 0	12D-CE01-T000-AS	12D-CE01-T000-AS-C		low slack	3/27/2012	
RM 1.4	12D-CE02-T014-AS	12D-CE02-T014-AS-C		maximum flood	3/27/2012	
RM 1.4	12D-CE02-T014-AS	12D-CE02-T014-AS-CX	Duplicate *	maximum flood	3/27/2012	

CPG - Cooperating Parties Group

DOC - dissolved organic carbon

ID - identification

MS/MSD - matrix spike/matrix spike duplicate

NA - not applicable; tributaries were not sampled over the course of a full tidal cycle

PAH - polycyclic aromatic hydrocarbon

PCB - polychlorinated biphenyl

PCDD/PCDF - polychlorinated dibenzodioxins/polychlorinated dibenzofurans

POC - particulate organic carbon

QC - quality control

SSC- suspended solids concentration

TDS - total dissolved solids

Ti - titanium

TOC - total organic carbon

* - field duplicate sample of CDM split sample 12D-CE02-T014-AS-C

** - MS/MSD only for PAH/Alkyl PAHs, total and dissolved mercury and methyl mercury, dissolved hexavalent chromium, TOC, POC and DOC

Attachment 1
Photographs of Physical Water Column Monitoring Activities



Photo 1. Sample collection at RM 10.2



Photo 2. Second River sample location area



Photo 3. Lowering YSI and sample tubing at Second River



Photo 4. Purging sample tubing at Second River



Photo 5. Sample Collection at Second River



Photo 6. Crews sampling from bridge at Saddle River.



Photo 7. Sample Collection at Saddle River



Photo 8. Sample Collection at Tidal 2-RM 4.2



Photo 9. Sample processing at CPG facility



Photo 10. Sample processing at the CPG facility

Attachment 2
Copies of Oversight Field Logbook Notes

Location Lower Passaic River Date 2/21/12Project / Client CWCM / oversight of AECOM12B-CE03-TU14-BS-C ————— PC

0747 - Finished collecting sample

0757 - AECOM begins collecting sample

12B-CE03-TU14-AS ————— PC

0815 - AECOM finished collecting sample

0945 - PC and SO head to Tidal 1 location

at RM 4.2 near FBI building in Newark, NJ.

1035 - AECOM begins collecting 12B-CE04-TTR1-BS

1056 - AECOM finished collecting sample

1115 - AECOM begins collecting 12B-CE04-TTR1-AS

CDM Smith is collecting split sample

12B-CE04-TTR1-AS-C

1150 - Finished sampling

1200 - Head to Arlington dock to transfer split samples to E. Kukulsky

1315 - Departed dock to go to RM 0.0. to

observe AECOM sampling ————— PC

1530 - PC offsite

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2/21/12

Location Rutherford Date 3/26/12Project / Client Passaic CWCMPRE: Modified Level 10
Personnel: JR (CDM-Smith)

Weather: 40°f wind

Objective: oversight and acceptance
of ~~Passaic~~^{2nd} River Sample

0720 JR arrives onsite

0800 JR departs CPG
facility and will head
to mill Street in
East Rutherford0815 AE-Com and CDM
arrive at second tributary,
Steve Back from OSI
arrivesAE-Com - Justin, Webster,
Tareq Adahm, Ryan McCarthy0947 12D-CE05-T2R1-AS
-C sample time1050 Sampling of th. 5 location
is completed

1200 JR departs CPG Facility

Today's Samples 12D-CE05-T3R1-AS-C 0911

12D-CE02-T102-AS-C 0920

JR 3-26-12 12D-CE05-T2R1-AS-C 0947

weather: Overcast

PPE: Level 0 modified

0800 - C. Whitton arrives in East Rutherford.

Proceeds to purchase ice.

0830 - CW onsite at CP6 facility. Buy ice for use later in the day.

0925 - Place excess ice in outdoor walk-in freezer.

0930 - Departs for Kearny dock.

0945 - CW arrives at boat ramp. CDM's boat with SO + MB aboard cannot pass under the Bridge St. Bridge due to high tide and storm water conditions and cannot make rendezvous.

1030 - Depart Kearny for CP6 facility.

1045 - CW at facility. George Molnar (CDM) is onsite. Discuss contingency plans for switching coolers with SO + MB.

11:00 - Remaining ice is bagged.

1330 - CW returns to Kearny dock.

1515 - SO + MB's last sample collection nearly complete, but the water at the dock is too low to disembark there. New drop-off location is in Applebee's parking lot.

1545 - SO + MB disembark with samples and team returns to CP6 facility.

1630 - CW signs out of facility and is offsite w/ samples.

Clarence M. Holt 8/16/11

P. Connelly

0650 - P. Connelly onsite at CP6 Facility. PC

0715 - C. Whitton, E. Kulkisley, J. Rakowski onsite at CP6 Facility. P.C. and C.W. will be collecting split sample at RM 10.2 today at about 08:50. E.K. and J.R. will be collecting splits at the 2nd and 3rd Rivers.

0745 - PC and CW head down river aboard the Sandy Miller piloted by Gene Carragher, F. Miller's Launch. PC

0820 - Arrive at RM 10.2. AECOM crew and OSI, aboard the RV OSPREP, are already onsite.

0825 - AECOM lowers PSI and tubing to 11.5 ft below surface. Depth to bottom = 14.5 ft. PC

0833 - Begin purging for sample 12D-CE02-T102-B5. CDM Smith will not collect a split from this interval.

0840 - While collecting for Hg analysis, AECOM observer the "clean hands"

P. Connelly 8/26/12

Technique

GPS coordinates are $Easting = 59216.22$ ft

Northing = 719750.12 ft ————— PC

0905 - Finished collecting sample. AECOM pulls up PSI and changes to fresh tubing. Next sample will be 12D-

CE02-T102-AS at 3 ft below surface. CCM Smith will collect a split here

0920 - Collect 12D-CE02-T102-AS-C split sample ————— PC

0950 - Finished collecting split. PC and CW head upriver to CP6 dock to transfer samples to EK + SR. PC will go to Saddle River to observe sampling there.

PC 1040 - PC relinquishes logbook to CW. P. Connolly

1045 - CW departs dock for RM 10.2. Arrive at 1205

1110 - AECOM sets up PSI. Depth to bottom = 16.5 ft. AECOM begins tubing to 13.5 ft.

1115 - AECOM begins pumping for sample 12D-CE03-T102-B5

1119 - AECOM collecting sample "Clean hands" procedures are followed for Hg analysis.

1150 - Sample collection complete. AECOM installs CW - 3-26-12

new tubing for sample 12D-CE03-T102-AS
1200 - AECOM collecting sample.

1225 - sampling complete. AECOM and CW to return to CP6 facility dock.

1250 - CW departs boat at CP6 facility.

1300 - CW signs out and leaves.

3/26/12
CWCN

1130 - C. Whittan boards AECOM's boat at
RN 42 / T. 42 to observe fourth tidal
event.

1150 - AECOM lowers YSI + pump to depth
of M. 7 for sample 120-CE03-TTR2-RS.

1202 - Sample start time

1233 - Sampling complete.

1240 - AECOM lowers YSI + pump intake
3 ft below surface for sample

124 - CE03-TTR2-RS.

1244 - Sample start time

1318 - Sample collection complete.

1325 - CW boards Miller boat to head
back upriver to CPG facility.

1400 - CW disembarks at facility & offsite.

~~CW Miller~~

3/27/12

Location Lower Passaic River Date 3/26/12
 Project / Client CWCM OVERSIGHT
3RD RIVER

0715 - ARRIVE ON SITE and SIT IN ON
 AECOM's KICKOFF/H&S BRIEFING

0730 - MEET UP WITH J. RAKOWSKI,
 P. CONNELLY and C. WHITTEN all of CDM,
 we do H&S BRIEFING and DISTRIBUTE THE
 BOTTLEWARE FOR SPLIT SAMPLING.

0800 - I HEAD OUT TO THE 3RD RIVER
 SAMPLING POINT WITH AECOM'S TEAM.
 DON IS THEIR TEAM LEAD.

0820 - ARRIVE ON SITE and BEGIN SETUP
 TO TAKE SAMPLES.

WE ARE IN BACK OF THE LA QUINCY
 HOTEL ON RIVER ROAD IN CLIFTON
 ON THE 3RD RIVER. SET UP ON THE
 SOUTH BANK SAMPLING FROM THE
 CENTER OF THE RIVER.

0911 - SAMPLE TIME. WE START
 SPLIT SAMPLING 120-CE05-TSR1-AT-C

1020 - END SAMPLING BEGIN CLEAN UP

1050 - BACK AT FACILITY SIGN LOGBOOK
 OVER TO PAT CONNELLY.

P. Connelly 3/26/12 takes over logbook

1130 - AECOM crew will head to Saddle
 River at about 12:00. PC will go

P. Connelly 3/26/12

Location LPR Date 3/26/12
 Project / Client CWCM OVERSIGHT
SADDLE RIVER

with that crew to do oversight.
 No split samples to be collected
 at Saddle River

1200 - J. Rakowski and E. Kulvsky
 OFF SITE with the 3 CDM Smith
 split samples collected today.
 they will go to Edison, NJ warehouse
 to pack and ship samples.

1245 - PC and AECOM crew arrive at
 Saddle River sampling location.

Sample will be collected from the
 Passaic Ave bridge. Sample ID
 is CE05-TSR1-AT. AECOM will
 also be collecting a duplicate here.

1259 - AECOM lowers pump YSE with
 new tubing attached into center of
 the river. Water depth is about
 1.5 feet.

1314 - AECOM begins sampling

1459 - Finished collecting sample

CE05-TSR1-AT + Duplicate
 Depth of pump was 0.5 feet

1515 - PC OFF SITE

P. Connelly 3/26/12

Location LPRDate 3/27/12Project / Client CWCM Oversight / USACE
RM 0.0 P. Connelly

0415 - ~~PC~~ ^{PC} P. Connelly and C. Whittier
onsite at CPB dock, meet with
G. Carragher of Miller's Launch.

0430 - Proceed downriver aboard the
vessel Sandy Miller to RM 0.0 — PC

0550 - Arrive at RM 0.0 — PC

0605 - AECOM begins collecting sample
12D-CE01-T000-AS. No split is
collected here — PC

Weather - 30°F, windy

0635 - They complete sample collection
of 12D-CE01-T000-AS.

0658 - Collect sample split sample
12D-CE01-T000-AS-C.

0750 - Finished collecting sample. AECOM
performs water quality check through
entire water column with YSI.

Water depth = 18.9 ft. — PC

X = 597430.34 ft Y = 683225.68 ft

0810 - Depart RM 0.0 and head to
RM 1.4 to observe sampling and
collect split sample — PC

0820 - Arrive at RM 1.4 — PC

0915 - AECOM begins pre-sampling water
P. Connelly 3/27/12

Location LPR ~~LPR~~Date 3/27/12Project / Client CWCM Oversight / USACE
RM 1.4 P. Connelly

column quality monitoring by slowly lowering
YSI through water column and taking
readings. Water depth = 16.47 ft.

0923 - Begin purging for sample 12D-
CE02-T014-B5. No split will be
collected on this sample — PC

0948 - Finished collecting sample.

AECOM will pull up YSI, change
tubing, and lower it to 3 feet
below surface for next sample.

Next sample will be a split with
CDM Smith. CDM Smith will also
collect a duplicate — PC

0959 - Begin purging sample 12D-CE02-
T014-AS. CDM Smith will collect
split and dup there — PC

1055 - Finished collecting sample. PC
and CW head up river — PC

1125 - CW gets off of the Sandy Miller
and onto the OSI boat at RM 4.4, 4.2

He will stay there and observe the
next sample. PC heads up river to
transfer samples to E. Kulkusky at the
Arlington dock near Rt. 7 bridge.

P. Connelly 3/27/12

Location LPRDate 3/27/12Project / Client CWCA Oversight / USACEP. Conolly

- 1140 - PC arrives at Arlington dock and transfers split samples to E. Kulvsky, who will take them to Edison, NJ warehouse to be packed and shipped. The Sandy Miller returns to Rm ^{PC} 4.2 to get C. Whitten. PC heads to OSIP, CPA Facility to observe sample packing.
- 1245 - PC finished observing sample packing at CPA Facility → PC
- 1300 - PC offsite

PC
3/27/12

Location _____

Date _____

Project / Client _____

Attachment 3
Copies of Signed Chain of Custodies

Cooler #:

Lab Phone: 8883730881

[illegible]

[illegible]

Passaic - F2L
Case Complete: False
Cooler #:

Lab: AXYS Analytical Services Ltd.
Lab Address: 2045 Mills Road W.
Lab Phone: 8883730881

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

[illegible]

AirbillNo: 798181592904

CHAIN OF CUSTODY RECORD

Passaic - F2L

Case Complete: False

Cooler #:

No: 2-031912-140757-0017

Lab: AXYS Analytical Services Ltd.

Lab Address: 2045 Mills Road W.

Lab Phone: 8883730881

[illegible]

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

[illegible]

Cooler #:

Lab Phone: 7323216707

[illegible]

Cooler #:

Lab Phone: 7323216707

Items/Reason	Relinquished by	Date	Received by	Date	Time
	L.R.	B-26-12			

Cooler #:

Lab Phone: 7323216707

[illegible]

Cooler #:

Lab Phone: 7323216707

[illegible]

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	J.R.	3-26-12									

Cooler #:

Lab Phone: 2197698378

[illegible]

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

[illegible]

AirbillNo: 793351095863

CHAIN OF CUSTODY RECORD

Passaic - F2L

Case Complete: False

Cooler #:

No: 2-031912-132334-0015

Lab: Microbac Laboratories, Inc.

Lab Address: 250 W. 84th Drive

Lab Phone: 2197698378

Lab #	Sample #	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Preservative	MS/MSD	Sampler
	12D-CE01-T000-AS-C	Mercury - Dissolved	Surface Water	3/27/2012	06:58	1	500 mL glass	4 C	N	GM
	12D-CE01-T000-AS-C	Mercury - Hg	Surface Water	3/27/2012	06:58	1	500 mL glass	4 C	N	GM
	12D-CE01-T000-AS-C	Methyl Mercury	Surface Water	3/27/2012	06:58	1	500 mL glass	4 C	N	GM
	12D-CE01-T000-AS-C	Methyl Mercury-Dissolved	Surface Water	3/27/2012	06:58	1	500 mL glass	4 C	N	GM
	12D-CE02-T014-AS-C	Mercury - Dissolved	Surface Water	3/27/2012	09:59	1	500 mL glass	4 C	N	GM
	12D-CE02-T014-AS-C	Mercury - Hg	Surface Water	3/27/2012	09:59	1	500 mL glass	4 C	N	GM
	12D-CE02-T014-AS-C	Methyl Mercury	Surface Water	3/27/2012	09:59	1	500 mL glass	4 C	N	GM
	12D-CE02-T014-AS-C	Methyl Mercury-Dissolved	Surface Water	3/27/2012	09:59	1	500 mL glass	4 C	N	GM
	12D-CE02-T014-AS-CX	Mercury - Dissolved	Surface Water	3/27/2012	09:59	1	500 mL glass	4 C	N	GM
	12D-CE02-T014-AS-CX	Mercury - Hg	Surface Water	3/27/2012	09:59	1	500 mL glass	4 C	N	GM
	12D-CE02-T014-AS-CX	Methyl Mercury	Surface Water	3/27/2012	09:59	1	500 mL glass	4 C	N	GM

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

[illegible]

[illegible]

Cooler #:

Lab Phone: 803-791-9700

[illegible]

[illegible]